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2 PLASMA ENHANCED ALD OF TANTALUM NITRIDE AND BILAYER

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4 ABSTRACT OF THE INVENTION

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6 A method to deposit TaN by plasma enhanced layer
7 with various nitrogen content. Using a mixture of
8 hydrogen and nitrogen plasma, the nitrogen content in
9 the film can be controlled from 0 to $N/Ta = 1.7$. By
10 turning off the nitrogen flow during deposition of TaN,
11 a TaN/Ta bilayer is easily grown, which has copper
12 diffusion barrier properties superior to those of a
13 single Ta layer or a single TaN layer.